

Nuclear Energy Renewal Act

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Background

In 2017, the U.S. nuclear fleet produced enough clean power to avoid the emission of 547 million metric tons of CO₂, which is more than hydropower, wind, and solar combined. Thus, ensuring that the current nuclear fleet remains operational is one of the most important aspects to slowing the impacts of climate change. Since 2013, seven reactors have been shut down and it is projected that by 2025 another 12 will be closed. These pending closures represent an added 55 million metric tons of CO₂ emissions a year - greater than the avoided emissions of all deployed solar power in the U.S. However, nuclear power faces substantial economic challenges in the U.S., most of which can be linked to electricity markets. The economics of nuclear reactors can be improved by making technological improvements to nuclear materials and fuels, and these improvements would not only benefit the economic viability of nuclear power, but would also improve plant safety.

Proposed Solution

The *Nuclear Energy Renewal Act* aims to improve the long-term sustainability, safety, and economic viability of the current U.S. nuclear fleet by employing new materials that will allow light water nuclear reactors to run longer and more efficiently, allowing nuclear plants to operate on a cost-competitive basis and ensuring the viability of nuclear power in the U.S. The bill directs the Secretary of Energy to facilitate advancements in fuel cycle technologies and materials technologies to support the economics of the current fleet and aid in the development and commercialization of advanced reactors.

Legislative Summary

The *Nuclear Energy Renewal Act* would:

- Expand the **Light Water Reactor Sustainability Program** in order to achieve the maximum benefits of the operating light water reactor fleet, anticipate and accommodate the increase in applications for license renewals, focus technology development on continued operation, and reducing the operation and maintenance costs of nuclear power plants.
- **Increase support for advanced nuclear technologies** by directing the Secretary to work in coordination with the Nuclear Regulatory Commission to develop certification and licensing criteria for advanced nuclear facilities, to provide assistance to eligible applicants, and to establish criteria for public outreach.
- **Establish the Nuclear Energy Research, Demonstration, and Development Program:**
 - **To** expand advanced modeling and simulation tools to include multiscale models of physics and chemistry.
 - **To** continue research and development on next-generation light water reactor fuels that demonstrate enhanced performance, accident tolerance, and transmutation fuels that demonstrate enhanced proliferation resistance.
 - **To** advance research related to advanced nuclear material recovery and advanced nuclear waste form development technologies with the goal of improving light water reactor fuel cycle performance.
 - **To** establish a competitively awarded traineeship and apprenticeship program to provide focused training with respect to the Department's mission.